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UTILITY PATENT APPLICATION **TRANSMITTAL**

Attorn	ey Docket No.	0315	
First li	nventor	Malpass	
Title	Slip Resis	tant Mat and Process	

(Only for new nonprovisional applications under 37 CFR 1.53(b))

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Applicant claims sm		8. Nucleotide and/or Amino Acid Sequence Submission
2. See 37 CFR 1.27.		(if applicable, all necessary)
3. Specification (preferred arrangement s	[Total Pages 8] et forth below)	a. Computer Readable Form (CRF)
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- Claim(s)		37 CFR 3.73(b) Statement Power of
- Abstract of the D	Disclosure	10. (when there is an assignee) Attorney
4. X Drawing(s) (35 U.	S.C. 113) [Total Sheets 6]	11. English Translation Document (if applicable) Information Disclosure Copies of IDS
5. Oath or Declaration	[Total Pages 2]	12. X Information Disclosure Statement (IDS)/PTO-1449 Citations
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1.63(d)(2) a		(b)(2)(B)(i). Applicant must attach form PTO/SB/35
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Co	omplete if Known	
Application Number		
Filing Date		
First Named Inventor	Malpass	
Examiner Name		
Group Art Unit		
Attorney Docket No.	0315	

METHOD OF PAYMENT	FEE CALCULATION (continued)	
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1. BASIC FILING FEE	115 110 215 55 Extension for reply within first month	
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107 490 207 245 Plant filing fee	119 310 219 155 Notice of Appeal	
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114 150 214 75 Provisional filling fee	121 270 221 135 Request for oral hearing	
· ·	138 1,510 138 1,510 Petition to institute a public use proceeding	
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2. EXTRA CLAIM FEES	141 1,240 241 620 Petition to revive - unintentional	
Fee from Extra Claims below Fee Paid	142 1,240 242 620 Utility issue fee (or reissue)	
Total Claims 16 -20** = 0 x =	143 440 243 220 Design issue fee	
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	123 50 123 50 Processing fee under 37 CFR 1.17(q)	
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104 270 204 135 Multiple dependent claim, if not paid	(37 ČFR § 1.129(a))	
109 80 209 40 ** Reissue independent claims over original patent	149 710 249 355 For each additional invention to be examined (37 CFR § 1.129(b))	
110 18 210 9 ** Reissue claims in excess of 20	179 710 279 355 Request for Continued Examination (RCE)	
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SUBMITTED BY			Complete (#	fapplicable)
Name (Pnnt/Type)	Daniel B. Runk	Registration No. (Attorney/Agent) 44,311	Telephone	513-579-6479
Signature	Na RN		Date	11-21-00

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KEATING, MUETHING & KLEKAMP, P.L.L.

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DANIEL B. RUNK

Direct Dial: (513) 579-6479 Facsimile: (513) 579-6956 E-Mail. DRUNK@KMKLAW.COM

November 21, 2000

Via U.S. Express Mail

Assistant Commissioner for Patents Box Patent Application Washington, D.C. 20231

RE: Patent Application for "Slip Resistant Mat and Process of Manufacture of Same"

Dear Sir or Madam:

Enclosed please find:

- 1. Utility Patent Application Transmittal;
- 2. Fee Transmittal Form;
- 3. Specification and Abstract (8 pages);
- 4. Drawings (6 sheets);
- 5. Declaration for Utility Patent Application;
- 6. Assignment of Invention and Recordation Form;
- 7. Power of Attorney;
- 8. Information Disclosure Statement;
- 9. Return Postcard;
- 10. Certificate of Express Mailing; and
- 11. Check for \$750 for \$710 filing fee and \$40 assignment fee.

Please file this application and if you have any questions do not hesitate to contact me (513-579-6479). Thank you for your assistance with this matter.

Very truly yours,

KEATING, MUETHING & KLEKAMP, P.L.L.

BY:

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Enclosures

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UNITED STATES PATENT APPLICATION SPECIFICATION

SLIP RESISTANT MAT AND PROCESS OF MANUFACTURE OF SAME

FIELD OF INVENTION

This invention relates generally to slip resistant, anti-skid or anti-creep mats.

BACKGROUND OF THE INVENTION

In the past, dust floor mats, consisting of rubber backed carpet tuft, were made with either a smooth back, primarily for solid or non carpeted floors, or with a variety of "grippers" or "cleats" arranged to reduce the movement on carpeted floors. However, both of these approaches resulted in floor mats that were not skid resistant on smooth floors, especially those floors with high traffic areas or loads being moved over them. The movement of in the gripper/cleat mat design results from the force of foot and vehicle traffic on the mat which causes deformation around the compressed area and upon removal of such force the mat returns to a different position. For the smooth back mats, movement of the mat results from similar forces and the lack of any device intended to secure the mat in place.

A number of approaches have been taken to attempt to reduce the movement of mats. One known approach to the problem is to fasten the mat to the intended surface by various devices, such as that suggested by Kessler in U.S. Patent No. 6,068,908 which utilizes a system by which a mat is fastened to the surface using a clip system. While this approach is well-developed, it results in floor mats that are difficult or impossible to move from place to place and the structures required to attach the mat add a measure of expense to the mat and difficulty to the installation. Also, attached mats are more rigid.

Another approach involves the use of a frame into which the mat is placed, such as the frames used by Moffitt, Jr. in U.S. Patent No. 4,361,614 and Kessler in U.S. Patent No. 6,042,915. The frame can be located flush with or upon the surface. In either circumstance,

unless the frame is fastened as mentioned above or embedded in the surface, the frame still has a tendency to shift on the surface. If the frame is fastened or embedded, then the problems mentioned above remain.

Another approach involves the use of suction cups, such as those commonly found on shower and bath mats, examples of which can be found by Lindholm in U.S. Patent No. 6,014,779 in which the corners of a rectangular mat are held by four suction cups and by Gavlak in U.S. Patent No. 2,081,992 in which a plurality of suctions cups hold the bathtub mat to the surface. While this invention provides acceptable slip-resistance for light shower and bath mat applications, traditional suctions cups are not sufficient to prevent slipping in high traffic areas and also result in waves forming within mats, which results in movement of the mats and a less stable and flat top surface for the mats.

As mentioned, existing approaches to reducing movement of mats include significant limitations. Further, the known approaches require additional space, components, installation effort and expense. As a result, significant improvement can still be made relative to reducing the movement of floor mats.

SUMMARY OF THE INVENTION

The object of the present invention is to utilize recessions formed on the underside of the mat to reduce movement of the mat on the intended surface, typically floors. The present invention utilizes a plurality of recessions to reduce the movement of the mat. The recessions receive a compression force upon having foot or vehicular traffic impact the mat and such compression force creates a small low pressure area or near vacuum inside the recessions being impacted against the floor. As a result, the vacuum then creates a force that acts to oppose the lateral motion of the mat that would otherwise result from the traffic.

The size and shape specifications of the recessions can be varied and they can be positioned in a variety of arrangements. The recessions can be any shape that is formed on the

underside of the mat, does not extend through the top of the mat (i.e., is contained within the mat), and adjoins the floor in a continuous manner to permit the formation of a low pressure area or near vacuum. In one embodiment, the recessions are two sizes of cylinders or recessed circles, one with a width of 0.75" and a depth of .040" and the other with a width of 1" and a depth of .063". Also, in one embodiment, the recessions are positioned in straight rows along one axis with the recessions in each adjacent row along such axis offset along the perpendicular axis such that every row is identical along the parallel axes but shifted along the perpendicular axis. In one embodiment the pattern does not extend to the edge of the mat in order to prevent tearing and permit the edge of the mat to be uniformly thick. The existence of multiple sizes of recessions permits improved performance on a variety of floor surfaces since larger recessions perform better on some surfaces and smaller recessions perform better on others.

In one embodiment, the recessions are formed on a base layer of material and then the base layer of material is laminated to one or more other top layers of material. While the layers can be made from different materials, in one embodiment the base layer and any intermediate layers are sheets of rubber and the uppermost of the top layers is a union of a rubber sheet with carpet, yarn or other fabric on top. In one embodiment, a soft, low durometer rubber compound, such as LD-35, is plied to a T6 aluminum mold to form the recessions and then this base layer is laminated with one or more upper layers formed from Millennium Mat MM-170 rubber compound with the uppermost layer bonded with a yarn/carpet material. In this embodiment, after lamination of the layers, the laminated sheet is pricked to avoid the accretion of gases during the curing process. Additionally, in another embodiment, additives can be introduced to the mat to make it anti-bacterial.

One advantage of the present invention is that the mat resists slipping to a much greater extent than existing mat designs. Another advantage of the invention is that the edges of the mat are more stable and therefore it is less of a tripping hazard or obstacle than traditional mats in which the edge easily rolls up onto the mat. Another advantage is that it provides the slip-resistance features without adding any weight or installation complexity to existing mat designs.

Another advantage is that the invention does not require any permanent fastening means and is therefore easy to move to different locations. Another advantage is that the recessions provide some additional cushioning effect for pedestrian and vehicular traffic. Another advantage is that the recessions' cushioning effect has an anti-fatigue effect, thereby resulting in reduced wear and tear and routine maintenance. Another advantage of the invention is that the slip-resistance is effective on a wide variety of surfaces because of the variable sized and spaced recessions.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a bottom fragmentary view of one embodiment of the present invention.

FIG. 2 is a fragmentary side elevational view of one embodiment of the present invention taken across Line A—A.

FIG. 3 is a fragmentary side elevational view of another embodiment of the present invention taken across Line A—A.

FIG. 4 is a fragmentary side elevational view of another embodiment of the present invention taken across Line A—A.

FIG. 5 is a cut-away elevational view of a single recession in one embodiment.

FIG. 6 is a fragmentary side elevational view of a single recession in one embodiment and the forces impacting such recession.

DETAILED DESCRIPTION

FIG 1 illustrates a portion of a mat (20) with a plurality of small recessions (25) and large recessions (30) that extend nearly to the edge of the mat (15).

FIG 2 illustrates a view of a cross-section of a single layer mat (20). The mat (20) has a single layer (40) which contains recessions (30) in the underside (61) of the bottom layer (40).

FIG 3 illustrates a view of a cross-section of another single layer mat (20). The mat (20) has a single bottom layer (40) which contains recessions (30) in the underside (61) of the bottom layer (40). The bottom layer has a yarn, carpet or other fabric layer (52) laminated or otherwise

bonded to the upper surface (60) of the bottom layer (40).

FIG 4 illustrates a view of a cross-section of a multi-layer laminated mat (20) comprised of a bottom layer (40) and an upper layer (50). The upper surface (60) of the bottom layer (40) is laminated to or otherwise bonded with the lower surface (70) of the support layer (51) of the upper layer (50). The upper layer (50) has a yarn, carpet or other fabric layer (52) laminated or otherwise bonded on the upper surface (71) of the support layer (51). The bottom layer (40) contains recessions (30) in the underside (61) of the bottom layer (40).

FIG 5 illustrates a conceptual drawing of a single recession (30) depicted in FIGS. 1, 2, 3 and 4. The recession (30) has a width (w) running from the left edge (31) to the right edge (32), a height (h) running from the top edge (35) to the bottom edge (36), and a depth (d) running from the bottom opening (38) that would be flat against the floor to the top surface (39).

FIG. 6 depicts a single recession (30) in a mat (20). As foot or vehicle traffic impacts the mat (20), a force (f) is applied to the mat (20). In the vast majority of circumstances the force (f) does not impact the mat (20) in a completely vertical or horizontal manner; hence the force (f) consists of both horizontal force components (f(x) and f(y)) and a vertical force component f(z). The vertical force component f(z) acts to press the mat down against the surface (10) and holds the mat (20) against the surface (10). Additionally, the vertical force component f(z) also compresses the recession (30) thereby creating a low pressure area or near vacuum in the recession (30) between the mat (20) and the surface (10) which results in an effective resistant downward force (s) which acts in combination with the vertical force component (fy) to oppose the horizontal force components f(x) and f(y) thereby resisting lateral movement of the mat (20).

The preceding description of the invention has shown and described certain embodiments thereof; however, it is intended by way of illustration and example only and not by way of limitation. Those skilled in the art should understand that various changes, omissions and additions may be made to the invention without departing from the spirit and scope of the invention.

CLAIMS

We claim:

1. A mat comprising:

at least one layer of material having a generally flat top surface and a generally flat bottom surface;

the bottom layer of said mat having a plurality of recessions on said bottom surface of said bottom layer.

- 2. That mat as described in claim 1 wherein said material is rubber or plastic.
- 3. The mat as described in claim 1 wherein said recessions are cylindrical in shape.
- 4. The mat as described in claim 1 wherein said recessions are formed in a plurality of straight rows on said bottom surface of said bottom layer and said plurality of straight rows are parallel to each other.
- 5. The mat as described in claim 1 wherein the upper surface of the top layer of said mat comprises a bond of said top layer with another layer consisting of the group of yarn, carpet or fabric.
- 6. The mat as described in claim 1 wherein said mat comprises two layers of materials having top and bottom surfaces the top surface of the bottom layer being bonded to the bottom surface of the top layer.
- 7. The mat as described in claim 5 wherein said mat comprises two layers of materials having top and bottom surfaces the top surface of the bottom layer being bonded to the bottom surface of the top layer.
- 8. The mat as described in claim 1 wherein said mat comprises two or more layers of material each of said layers consisting of a different material.
- 9. The mat as described in claim 8 wherein said layers consist of varieties of rubber having varying flexibilities.
 - 10. The mat as described in claim 7 wherein said bottom layer consists of a rubber

compound having a lower durometer reading than said top layer.

- 11. The mat as described in claim 10 wherein said bottom layer has a durometer reading of less than 45 units and said top layer has a durometer reading of more than 75 units.
- 12. The mat as described in claim 10 wherein the durometer reading of said bottom layer is at least 25 durometer units less than said top layer.
- 13. The mat as described in claim 1 wherein said material of at least one layer if said mat is impregnated with anti-bacterial materials.
- 14. A process for producing a mat according to claim 1, comprising the steps of: supplying a sheet of material to a mold for a press molding of said mat; and carrying out a press molding.
- 15. A process as described in claim 14 also comprising the step of cutting a molded sheet to the desired size to obtain a floor mat.
- 16. A process for producing a mat according to claim 6 or 7, comprising the steps of: producing a bottom layer of material according to claim 14 or 15; supplying a top layer of material; and laminating said bottom layer and said top layer of material; and curing said mat.
- of:
 producing a bottom layer of material according to claim 14 or 15;
 supplying a top layer of material;
 laminating said bottom layer and said top layer of material;
 pricking said mat; and
 curing said mat.

ABSTRACT

A slip resistant floor mat composed of one or more layers of material the bottom layer of which incorporates a plurality of recessions in the bottom surface of the bottom layer that comes into contact with the intended surface, such as a floor. The mat may be manufactured by using a press mold to form recessions on the bottom surface of the bottom layer of the mat, and if desired, additional layers may be laminated together with the bottom layer.

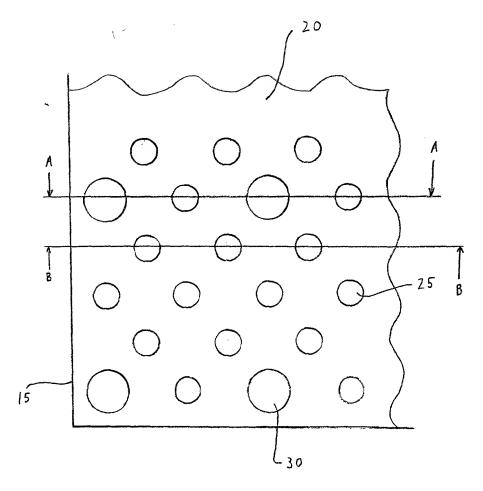
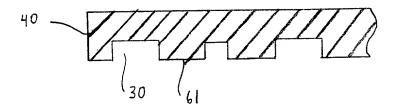
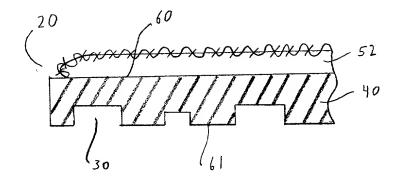


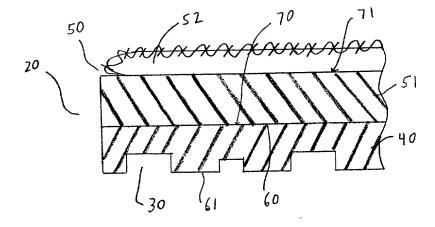
FIG. 1



F16. 2



F1G. 3



F1G. 4

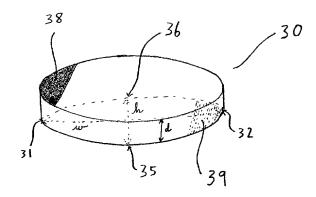
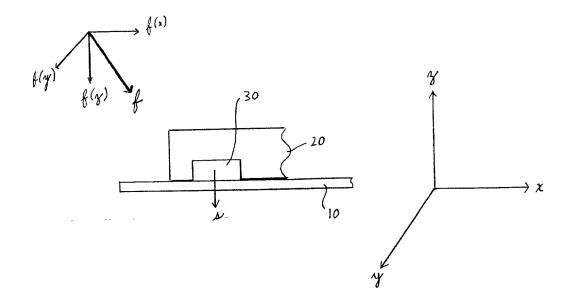


FIG. 5



F16. 6

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First Named Inventor		Malpass	
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As a below named inventor, I hereby declare that: My residence, mailing address, and citizenship are as stated below next to my name. I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: Slip Resistant Mat and Process of Manufacture of Same (Title of the Invention) the specification of which is attached hereto as United States Application Number or PCT International was filed on (MM/DD/YYYY) (if applicable). Application Number and was amended on (MM/DD/YYYY) I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above. I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application. I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or any PCT international application having a filing date before that of the application on which priority is claimed. **Certified Copy Attached? Priority Foreign Filing Date Prior Foreign Application** Country **Not Claimed** (MM/DD/YYYY) YES Number(s) Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto: I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below. Filing Date (MM/DD/YYYY) Application Number(s) Additional provisional application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

[Page 1 of 2]

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NAME OF SECOND INVENTOR:			A peti	tion has been fi	led for this unsigned inventor
Given Name (first and middle [if any]) Jeffrey L.			Family or Sur		r
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Applicant/Inventor.

forms if more than one aignature is required, see below.

Assignee of record of the entire interest. See 37 CFR 3,71,

forms are automitted.

Statement under 37/CKR 3.73(b) is enclosed. (Form PTO/SB/96).

Firm or Individual Name

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Rurden Hour Statement: This form is assignated to take 3 minutes to samplete. These will very depending upon the needs of the inclusival case. Any comments on the amount of time you are required to complete this form should be sont to the Chief Information Officer, U.S. Prient and Tradition Office, Washington, DC 20231. GO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

SIGNATURE of Applicant or Assignee of Record

Company, LLC

00 NOTE: Signatures of all the inventors of assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one strong are strong up to account the property of the entire interest or their representative(s) are required. Submit multiple

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